

7.—A 3,300 year old Thylacine (Marsupialia: Thylacinidae) from the Nullarbor Plain, Western Australia

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Abstract

An almost complete skeleton of the thylacine, *Thylacinus cynocephalus* (Harris), was recovered from Murra-el-elevyn Cave on the Nullarbor Plain, Western Australia. Analysis of dried tissue attached to the bones gave a C^{14} date of $3,280 \pm 90$ years, making this specimen the youngest thylacine yet recovered from the mainland of Australia.

Introduction

In December 1963 and January 1964 members of the Sydney University Speleological Society organized an expedition to the Nullarbor Plain. During the exploration of the cave Murra-el-elevyn, near Cocklebidy in Western Australia, the remains of a thylacine were discovered by Mr. N. Campbell. Most of the skeleton was removed from the cave before it could be photographed *in situ*, and it proved impossible at the time to return and collect the remainder.

Murra-el-elevyn Cave, one of the deeper caves on the Nullarbor, is situated about five miles west of Cocklebidy Tank. The entrance to the cave is at the bottom of a deep undercut collapse doline. The cave consists of several large chambers of considerable depth, the water-level of the lake in the first chamber being about 289 feet below ground level (Anderson 1964). Lundelius (1963) collected from a limited area below the overhanging roof the remains of small mammals which he considered to be derived from regurgitated owl pellets. In contrast to this collection, the thylacine was found well inside the cave, lying in loose dry sand in an upper passage among the boulders of a rockfall. At the time the presence of the thylacine so far within the cave suggested the existence of a second entrance, but a short search failed to reveal one.

Description of the specimen

The thylacine skeleton (W. Aust. Mus. specimen 64-8-1) consists of the following: the complete skull and mandible with all teeth in place; the vertebral column with the exception of the sacrum and caudal vertebrae; nine ribs; the right half of the pectoral girdle and the right forelimb, and the left half of the pelvic girdle and left hindlimb. Many of the bones were still articulated and in several cases dried soft tissues were attached to them. The right humerus and clavicle were embedded in a sheet of this material (Fig. 1). Except for the atlas and the last lumbar vertebra, the backbone was recovered in three sections with the vertebrae

still articulated and partly covered with the dried tissue. The radius was joined to the fully articulated bones of the manus, which was also covered with dried tissue. The bones of the pes were similarly recovered as a unit.

The skeleton seems to be that of a mature thylacine. All the teeth have erupted and their occlusal surfaces show a mild degree of wear. None of the bones collected show any signs of premortem damage. One of the transverse processes of the last lumbar vertebra has been broken off, and some of the teeth are chipped, but this damage probably occurred during the removal of the skeleton from the cave. There is no evidence as to the cause of death.

TABLE 1

Comparison of the Murra-el-elevyn specimen with the Western Australian cave fossils of *Thylacinus cynocephalus*

Character	W.A.M. 64.8.1	Western cave thylacines (Ride 1964)	
	x mm.	x mm.	Range mm
M ² pr.-mc.	12.6	13.0	11.4-16.0
M ³ pr.-mc.	13.7	15.4	13.2-17.6
M ¹⁻⁴ length	38.3	40.0	36.8-45.9
P ₄ length	9.6	10.7	9.3-12.1
P ₄ C length	47.6	49.9	38.0-57.9
M ₁ length	13.0	14.9	12.8-16.9
Ht at P ₄	24.3	29.9	24.4-34.8

Ride (1964) compared the dental characters of thylacines from the cave faunas of both eastern and western Australia with the modern Tasmanian population of *Thylacinus cynocephalus* (Harris). He concluded that the size difference between the smaller western thylacines and the larger eastern forms, both fossil and modern, was not significant at a specific or subspecific level. Comparative dental measurements (Table 1) show that the thylacine from Murra-el-elevyn Cave falls at the lower end of the size range of *Thylacinus cynocephalus* from south-western Australia. This suggests that the skeleton is that of a female, there being a marked sexual dimorphism in *Thylacinus*.

Age

An estimation of the age of the skeleton was obtained by a carbon 14 assay of part of the dried tissue attached to the bones. This gave a direct date of the time of death of the thylacine on the Nullarbor at 3280 ± 90 years B.P.

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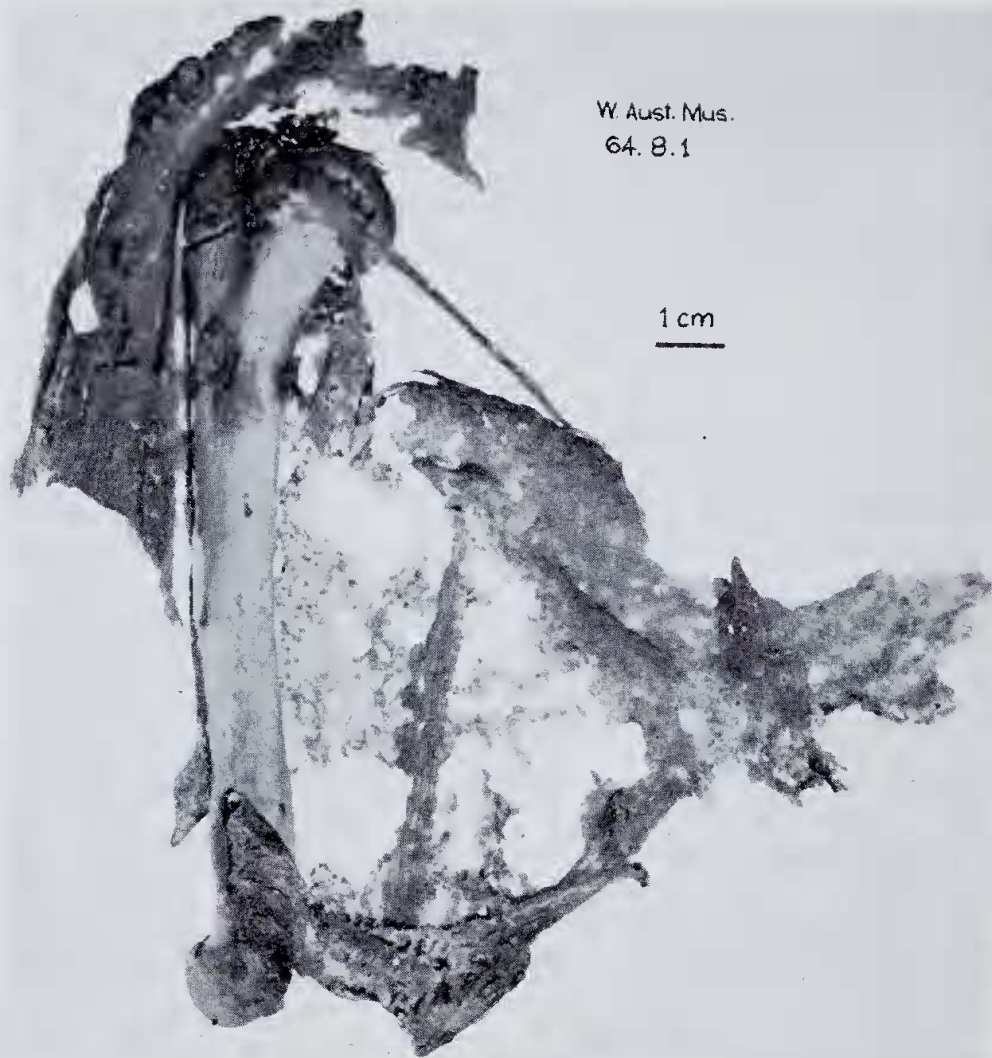


Figure 1.—Right humerus and clavicle of the Murra-el-elevyn thylacine showing attached dried tissue.

Discussion

The thylacine has existed in historical times only in Tasmania where it is now extremely rare and may be on the verge of extinction. Cave fossils indicate that it once ranged widely throughout mainland Australia. Two size forms are known, the smaller western Australian form, which includes the Murra-el-elevyn thylacine, and the larger eastern Australian form, which includes the historical Tasmanian population. The species is represented in New Guinea by a mandible from an archeological level dated at about 10,000 years B.P. (Van Deusen 1963, Bulmer 1964). The only other recent, genuinely dated specimen is a small, morphologically unusual, thylacine molar from an archeological excavation at Fromm's Landing on the Murray River in South Australia (Macintosh and Mahoney 1964). This was found at a level dated at 4,000 years B.P. The 3,300 year old thylacine from Murra-el-elevyn is thus the most recent specimen yet found.

The smaller western thylacine has been reported from bone deposits in many of the caves of south-western Australia (Glauert 1948, Cook 1963). The only other record from the Nullarbor Plain is of single thylacine molar associated with

remains of the Tasmanian devil, *Sarcophilus harrisi*, in Webb's Cave, Mundrabilla Station, Western Australia. (Cook 1963a). The widespread occurrence in Western Australian cave deposits of the thylacine and the Tasmanian devil, both now restricted to Tasmania, has led to the suggestion that they may be indicative of more humid climatic conditions in the past (Cook 1963) and that their present absence may be related to climatic change. If this is so, the presence of the thylacine on the Nullarbor as late as 3,300 years ago would suggest that at least until that time there was no essential climate change in the area. This supports Lundelius' (1960) findings that in the cave deposits of south-western Australia there is no evidence of a period between 4,000 and 7,000 years ago of greater aridity than at present, as has been suggested by Gill (1955) for Victoria.

However, it is possible that the thylacine is not a reliable indicator of climatic change, and that its extinction on the mainland cannot be attributed to increasing aridity alone. Other factors such as disease and competition with the dingo have been suggested as contributing to its decline. In this connection it is interesting to note that the oldest genuinely dated

dingo comes from a 3,000 year old level of the Fromm's Landing excavation (Macintosh 1964), and so approximately coincides in age with the Murra-el-elevyn thylacine.

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